Notice of Allowability	Application No.	Applicant(s)	
	09/925,932	HARMAN ET AL.	
	Examiner	Art Unit	
	Vikkram Bali	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *4/19/2005*.

2. ☒ The allowed claim(s) is/are *1-30, 37, 45, 49, 50-52, 58, 60-61 (renumbered as 1-39)*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☒ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Douglas W. Robinson, 32,751 on 9/8/2005.

The application has been amended as follows:

In claims:

Cancel claims 31-36; 38-44; 46-48; 53-57; 59.

Amend the following claims:

37 (currently amended): A method of creating a series of depth maps for an image sequence including the steps of:

receiving a depth map for at least one frame of said image sequence;

utilizing said at least one depth map to determine a second configuration of a second algorithm to ascertain the depth characteristics as a function of relative location and image characteristics;

utilizing said algorithm to create a depth map for each frame of said image sequence;

wherein a learning algorithm is utilized to determine the configuration of said second algorithm; and

[as claimed in claim 35,] wherein said second algorithm computes:

$z_n = k_a . x_n + k_b . y_n + k_c . R_n + k_d . G_n + k_e . B_n$

where

n is the nth pixel in the key-frame image

z_n is the value of the depth assigned to the pixel at x_n, y_n

k_a to k_e are constants and are determined by the algorithm

R_n is the value of the Red component of the pixel at x_n, y_n

G_n is the value of the Green component of the pixel at x_n, y_n

B_n is the value of the Blue component of the pixel at x_n, y_n.

45 (currently amended): A method of creating a series of depth maps for an image sequence including the steps of:

receiving a depth map for at least one frame of said image sequence;

utilizing said at least one depth map to determine a second algorithm to ascertain the depth characteristics as a function of x,y coordinates and image characteristics;

utilizing said algorithm to create a depth map for each frame of said image sequence;

wherein a learning algorithm is utilized to determine the configuration of said second algorithm; and

[as claimed in claim 43,] wherein said second algorithm computes:

$z_n = k_a . x_n + k_b . y_n + k_c . R_n + k_d . G_n + k_e . B_n$

where

n is the nth pixel in the key-frame image

z_n is the value of the depth assigned to the pixel at x_n, Y_n

k_a to k_e are constants and are determined by the algorithm

R_n is the value of the Red component of the pixel at x_n, y_n

G_n is the value of the Green component of the pixel at x_n, y_n

B_n is the value of the Blue component of the pixel at x_n, y_n.

Claim 49 (currently amended): A method of creating a series of depth maps for an image sequence including the steps of:

receiving a depth map for at least one frame of said image sequence;

utilizing said at least one depth map to determine a second configuration of a second algorithm to ascertain the depth characteristics as a function of relative location and image characteristics;

utilizing said algorithm to create a depth map for each frame of said image sequence;

wherein a learning algorithm is utilized to determine the configuration of said second algorithm; and

[as claimed in claim 35,] wherein said second algorithm computes:

$z_n = k_a.x_n + k_b.y_n + k_c.R_n + k_d.G_n + k_e.B_n + k_f.T$

where:

n is the nth pixel in the image

z_n is the value of the depth assigned to the pixel at x_n,y_n

k_a to k_f are constants previously determined by the algorithm

R_n is the value of the Red component of the pixel at x_n,y_n

G_n is the value of the Green component of the pixel at x_n,y_n

B_n is the value of the Blue component of the pixel at x_n,y_n

T is a measurement of time, for this particular frame in the sequence.

58 (currently amended): A method of encoding a series of frames including transmitting at least one mapping function together with said frames, wherein said mapping function includes an algorithm to ascertain depth characteristics as a function of relative location and image characteristics;

wherein a learning algorithm is utilized to determine said mapping function; and

[as claimed in claim 56,] wherein said mapping function computes:

$z_n=k_a.x_n+k_b.y_n+k_c.R_n+k_d.G_n+k_e.B_n$

where

n is the nth pixel in the key-frame image

z_n is the value of the depth assigned to the pixel at x_n,Y_n

k_a to k_e are constants and are determined by the algorithm

R_n is the value of the Red component of the pixel at x_n,y_n

G_n is the value of the Green component of the pixel at x_n,y_n

B_n is the value of the Blue component of the pixel at x_n,y_n.

60 (currently amended): A method of creating a series of depth maps for an image sequence including the steps of:

receiving a depth map for at least one frame of said image sequence;

utilizing said at least one depth map to determine a second algorithm to ascertain the depth characteristics as a function of x,y coordinates and image characteristics;

utilizing said algorithm to create a depth map for each frame of said image sequence;

wherein a learning algorithm is utilized to determine the configuration of said second algorithm; and

[as claimed in claim 43,] wherein said second algorithm computes:

$z_n = k_a.x_n + k_b.y_n + k_c.R_n + k_d.G_n + k_e.B_n + k_f.T$

where:

n is the nth pixel in the image

z_n is the value of the depth assigned to the pixel at x_n,y_n

k_a to k_f are constants previously determined by the algorithm

R_n is the value of the Red component of the pixel at x_n,y_n

G_n is the value of the Green component of the pixel at x_n,y_n

B_n is the value of the Blue component of the pixel at x_n,y_n

T is a measurement of time, for this particular frame in the sequence.

61 (Currently amended) A method of creating a series of depth maps for an image sequence including the steps of:

receiving depth maps for at least two key frames of said image sequence;

utilizing said depth maps to determine a second algorithm to ascertain the depth characteristics as a function of x,y coordinates and image characteristics;

utilizing said algorithm to create a depth map of each frame of said image sequence, wherein frames adjacent said key frames are processed prior to non-adjacent frames;

[as claimed in claim 47,] wherein said second algorithm computes:

$z_n = k_a.x_n + k_b.y_n + k_c.R_n + k_d.G_n + k_e.B_n + k_f.T$

where:

n is the nth pixel in the image

z_n is the value of the depth assigned to the pixel at x_n,y_n

k_a to k_f are constants previously determined by the algorithm

R_n is the value of the Red component of the pixel at x_n,y_n

G_n is the value of the Green component of the pixel at x_n,y_n

B_n is the value of the Blue component of the pixel at x_n,y_n

T is a measurement of time, for this particular frame in the sequence.

Allowable Subject Matter

2. Claims 1-30, 37, 45, 49, 50-52, 58, 60-61 (renumbered as 1-39) are allowed.

3. The following is an examiner's statement of reasons for allowance:

Per the applicants persuasive arguments filled on 4/19/2005, see pages 13-15 regarding independent claims 1, 16 and 50 all the rejections to independent claims 1, 16 and 50 are withdrawn and therefore the claims are allowed.

Claims 37, 45, 49, 58, 60 and 61 are allowed because the prior art alone or in combination with fails to disclose or suggest a method of creating a series of depth maps for an image sequence including the step of utilizing said at least one depth map to determine a second algorithm to ascertain the depth characteristics as a function of x,y coordinates and image characteristics; utilizing said algorithm to create a depth map for each frame of said image sequence; wherein a learning algorithm is utilized to determine the configuration of said second algorithm; and wherein said second algorithm computes:

$z_n = k_a.x_n + k_b.y_n + k_c.R_n + k_d.G_n + k_e.B_n + k_f.T$

where:

n is the nth pixel in the image

z_n is the value of the depth assigned to the pixel at x_n,y_n

k_a to k_f are constants previously determined by the algorithm

R_n is the value of the Red component of the pixel at x_n,y_n

G_n is the value of the Green component of the pixel at x_n,y_n

B_n is the value of the Blue component of the pixel at x_n,y_n

T is a measurement of time, for this particular frame in the sequence, in combination with the other limitations as claimed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vikkram Bali whose telephone number is 571.272.7415. The examiner can normally be reached on 7:00 AM - 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on 571.272.7414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Vikram Bali
Primary Examiner
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vb
September 8, 2005